CLAIMS

What is claimed is:

1. A method for determining a received channel power indicator (RCPI), comprising the steps of:

a) measuring radio frequency (RF) power of a signal received at an antenna;

b) converting the measurement to a given parameter; and

c) scaling the parameter in decibels (dB), to obtain the RCPI value.

2. The method of claim 1 further comprising:
presenting the RCPI value in an eight (8) bit digital format.

3. The method of claim 2 further comprising presenting the RCPI value in a range from 0 through 221.

4. The method of claim 1 further comprising measuring RCPI during reception of a physical layer convergence protocol (PLCP) preamble and over reception of an entire frame.

5. The method of claim 1 further comprising measuring RCPI at a physical layer (PHY).

6. The method of claim 1 further comprising measuring RCPI at a direct sequence spread spectrum (DSSS).

7. The method of claim 5 further comprising providing the RCPI to a medium access control (MAC) layer.

8. The method of claim 1 wherein step (a) comprises measuring a signal which includes signal, noise and interference.

9. A method for determining a perceived signal to noise indicator for a given wireless station, which is a quantized, comparative measure expressed in decibels (dB) of received signal quality represented by signal to noise plus interference ratio (S/N+I) regardless of channel used for radio transmission and transmission rate comprising:

determining a relationship between PSNI and signal to noise ratio (Eb/No) by obtaining an observed Eb/No represented by O EbNo, when PSNI=O employing binary phase shift keying (BDSK) at a give data rate;

employing predetermined number of units per dB to obtain a 32dB range in for a PSNI value represented by a corresponding number of binary bits; and

modifying the PSNI relationship by adding a data rate/modulation (DRMX) value to accommodate a given data rate and modulation and a given hardware factor (CFy) to account for variances in each forward error correction (FEC) decoder in the station.

10. The method of claim 9 further comprising:

employing eight (8) units per dB to obtain a 32dB range in for a PSNI value represented by eight (8) binary bits, whereby for operation at said given date rate employing

BPSK, PSNI=8* [OEbNo - 4.4dB + DRMx - CFy]; and

modifying the PSNI relationship by adding a data rate/modulation (DRMX) value to accommodate a given data rate and modulation and a given hardware factor (CFy) to account for variances in each forward error correction (FEC) decoder in the station whereby

PSNI=8*[OEbNo-4.4dB+DRMx-CFy].

11. The method of claim 10 further comprising substituting

OSNIR + 13.4dB-DRMx for OEbNo,

where OSN1R is an observe signal to noise plus interference ration, and PSNI is represented by
PSNI=8* [OSNIR + 9.0dB-CFy].

12. The method of claim 11 further comprising substituting
ISNIR-TML-CI for DSNIR,
where TML represents modem implementation loss and CI represents a sum of all channel impairments
PSNI=8*[(ISNIR-TM-CI+9.0dB-CFy]
yielding a PSNI which is a direct measure of observed SNIR.

13. The method of claim 9 wherein the correction factor CFy is utilized to account for an actual coding gain (CGact) of an FEC decoder.

14. The method of claim 9 further comprising normalizing PSNI for all stations by employing the value CFy.

15. The method of claim 9 further comprising normalizing PSNI for all stations by employing the value CFy so that PSNI assumes a theoretical coding gain.

16. A receiver capable of determining a received channel power indicator (RCPI), the receiver comprising:

a radio front end capable of measuring radio frequency (RF) power of a signal received at an antenna;

an AGC circuit for converting the measurement to a given parameter; and

a circuit for scaling the given parameter in decibels (dB), to obtain an RCPI value.

17. The receiver of claim 16 further wherein the circuit for scaling presents the RCPI value in an eight (8) bit digital format at a range from 0 through 221.

18. The receiver of claim 16 wherein the receiver measures RCPI during reception of a physical layer convergence protocol (PLCP) preamble and over reception of an entire frame.

19. The receiver of claim 16 wherein the receiver measures RCPI at a physical layer (PHY).

20. The receiver of claim 16 wherein the receiver measures RCPI at a direct sequence spread spectrum (DSSS).

21. The receiver of claim 16 wherein the receiver provides the RCPI to a medium access control (MAC) layer.

22. The receiver of claim 16 wherein the receiver measures a signal which includes signal, noise and interference.

23. The receiver of claim 16 further comprising:

a circuit for determining a relationship between PSNI and signal to noise ratio (Eb/No) by obtaining an observed Eb/No represented by O EbNo, when PSNI=O employing binary phase shift keying (BDSK) at a give data rate, employing a predetermined units per dB to obtain a 32dB range in for a PSNI value represented a corresponding number of binary bits; and

a circuit for ranging the PSNI value and modifying the PSNI relationship by adding a data rate/modulation (DRMX) value to accommodate a given data rate and modulation and a given hardware factor (CFy) to account for variances in each forward error correction (FEC) decoder in the station.

24. The receiver of claim 23 further comprising:

the circuit for ranging the PSNI value and modifying the PSNI relationship substituting OSNIR + 13.4dB-DRMx for OEbNo, where OSN1R is an observe signal to noise plus interference ration; PSNI is represented by PSNI=8* [OSNIR + 9.0dB-CFy], substituting ISNIR-TML-CI for DSNIR, where TML represents modem implementation loss and CI represents a sum of all channel impairments, yielding a PSNI which is a direct measure of observed SNIR.

25. In a multiuser wireless communications system, a method for scaling received signals, the method comprising:

establishing a perceived signal to noise indicator (PSNI) value, the PSNI value providing a measure of perceived, post-processing signal-to-noise-plus-interference ratio (S/(N+I)) ratio in a demodulator so as to measure in a current received frame at a PHY sublayer a perceived signal quality observed after an RF downconversion, the measurement derived from predetermined internal digital signal prcessing metrics of the demodulator

26. The method of claim 25, further characterized by measuring the PSNI value over measured over the physical layer convergence protocol (PLCP) preamble and over the received frame.

27. The method of claim 25, further characterized by utilizing the PSNI value as a monotonically increasing, logarithmic function of the observed S/(N+I).

28. The method of claim 25, further characterized by utilizing the PSNI value as a monotonically increasing, logarithmic function of the observed S/(N+I), the PSNI providing an indication of additive white Gaussian noise (AWGN) at given FERs for each data rate.

29. The method of claim 25, further characterized by utilizing values for the PSNI parameter as an 8 bit value in the range from 0 through 255.

30. In a multiuser wireless communications system, a method for scaling received signals, the method comprising:

receiving a signal and demodulating the signal to at least a physical sublayer; and

establishing a perceived signal to noise indicator (PSNI) value, the PSNI value providing a measure of perceived, post-processing signal-to-noise-plus-interference ratio (S/(N+I)) ratio for the physical sublayer of the demodulated signal, the measurement derived from predetermined internal digital signal processing metrics of the demodulator.

31. The method of claim 30, wherein the PSNI value provides a measure in a current received frame at the physical sublayer of perceived, post-processing signal-to-noise-plus-interference (S/(N+I)) ratio in the demodulator.

32. The method of claim 30, further characterized by measuring the PSNI value over measured over the physical layer convergence protocol (PLCP) preamble and over the received frame, the PSNI value utilized as a monotonically increasing, logarithmic function of the observed S/(N+I).

33. The method of claim 30, further characterized by measuring the PSNI value over measured over the physical layer convergence protocol (PLCP) preamble and over the received frame, the PSNI value utilized as a monotonically increasing, logarithmic function of the observed S/(N+I) and providing an indication of additive white Gaussian noise (AWGN) at given FERs for each data rate.

34. The method of claim 30, further characterized by utilizing values for the PSNI parameter as an 8 bit value in the range from 0 through 255.

35. A multiuser communications receiver comprising:

an RF stage receiving an antenna input signal;

a demodulator for demodulating the signal to at least a physical sublayer;

a circuit for determining a perceived signal to noise indicator (PSNI) value, as described in claim 30; and

a circuit for providing a signal adjustment value in response to the PSNI value.